



ANC-6090C

Rev C

RS-232 to CMOS/TTL

Our standard ANC-6090 RS232-RS422/485 can be used for converting RS232 bipolar signals to/from CMOS/TTL level signals. When we ship the ANC-6090C adapter, it has been modified for use in low voltage operation as described below.

The modification to the standard ANC-6090 consists of cutting a jumper trace (JP8) connected between pin 18 on the MAX3162 chip to the JP4 jumper 120 ohm terminating resistor (JP8 is on same side of card as MAX3162 chip cut the trace between the 2 small square pads). Installing a resistor divider consisting of a 10K ohm 0806 SMD resistor from +3.3v to pin 18 on the R3 position pads (located near the 120 ohm R2 terminating resistor) and a 10K ohm 0806 SMD resistor from pin 18 to ground in the R1 position (located near J4). Enabling the J4 jumper to connect the resistor divider across pin 17. Pin 17 will now be biased around +1.4v meaning a "1" will be detected on pin 18 around +1.6v and a "0" around +1.0v. This results in the adapter now accepting an inverted CMOS/TTL signal to drive the RS232 output pin. The inverted input/output arrangement is the most common interface to serial pins on microprocessors and microcontrollers. The user has both inverted and in-phase buffered CMOS/TTL level output from the RS-232 input. The CMOS/TTL input pin can tolerate an input voltage of +12v to -7v.

CMOS/TTL Interface Pinouts

The table below shows the signal pins for CMOS/TTL use. Pin definitions are for the factory set internal jumpers.

Pin #	Function	RS422 Designation	Comment
7	Inverted CMOS/TTL input to adapter	RC+	Inverted RS232 level input
3	Inverted CMOS/TTL output from adapter	TX+	Inverted RS232 level CMOS/TTL output
8	CMOS/TTL output from adapter	TX-	In-phase RS232 level CMOS/TTL output
1 or 5	ground	ground	Signal ground reference

The ANC-6090 User's Manual, downloadable from Antona.com, will be useful for setting up the RS232 side interface, but the information on inputting RS422/485 differential signals is not applicable.

Logic Level Response

The table below gives the user an idea of how the adapter responds to CMOS/TTL and RS232 input, and the corresponding output voltage levels. These values may vary by ±20%.

CMOS/TTL Input	RS232 Output	Comment
Low < = +1.0v	+5.4v typical	Inverted RS232 level out
High > = +1.6v	-5.4v typical	Inverted RS232 level out

RS232 Input	CMOS/TTL Output	Comment
Low < = +0.6v	+3.3v typical	CMOS/TTL output low
High > = +2.0v	+1v typical	CMOS/TTL output high

Power Supply

The adapter is normally powered from the serial port side DTR, RTS and TX input pins. If there is insufficient current to operate the adapter (some of the newer laptop computers are too low in current drive), an external power source would be required. As long as the external source is DC, and capable of 20ma, you may use power sources between +3v and +12v to power the adapter. An internal +3.3v LDO voltage regulator handles the voltage conversion for unit operation. External DC voltage can be applied on the CMOS/TTL DB-9 connector using pin 9 for the +DC voltage, and pin 1 or 5 for the power supply ground as shown on the adapter schematic.

RS232 - RS422/485 Operation

This adapter is the same as our standard ANC-6090 converter, it can also be used for an RS-232 – RS-422/485 adapter by reconnecting the JP8 jumper. For use as an RS-422/485 OUTPUT device only – the adapter needs no change to it.

For doing both transmitting and *receiving* RS422/485, the following change needs to be made. The user needs to disconnect the adapter from any attached equipment with power off, remove the plastic case (as described in the ANC-6090 User's Manual) and then locate JP8 (the 2 small lands on the same side of the card as the U1 MAX3162 chip near pins 17-19 of that chip). The user needs to add a solder bridge across the 2 small square lands to restore the connection to R2 and enable '–RC' for RS-422/485 inputting. Depending upon your application, the 120 ohm terminating resistor (JP4) may also be disabled at this time for RS-422/485 usage. Downloading the [ANC-6090 User's Manual](#) from the [Antona.com](http://www.antona.com) website will provide complete interface information and jumper options available on the product for use in this mode.